sections to the point where they can no longer be used because of the increased risk of failure. Accordingly, drilling operators typically monitor the wear of each section of drill pipe and retire a section when the wear reaches a preselected limit, which is often referred to the wear allowance. This monitoring is typically done by measuring the diameter of the pipe section, which requires a worker to manually apply a measuring tool or gauge to the pipe.

It can be understood then that a need exists for an effective means of individually marking sections of drill pipe so that each section can be identified and tracked. A need also exists for a more effective and less labor intensive means of monitoring the degree of wear to individual sections of drill pipe and determining when a section should be taken out of service.

SUMMARY OF THE INVENTION

According to a first aspect, there is provided an identification system for a component which comprises a body having an outer surface which in use is subject to wear, the system comprising: an identification disk which comprises upper and lower faces and a thickness which is defined between the upper and lower faces; a unique identifying marking which is provided on at least the upper face, the identifying marking corresponding to the identity of the component; a cavity which is formed in the body and extends from the outer surface to a depth that is greater than the thickness of the disk; wherein in use of the identification system the disk is positioned in the cavity such that the upper face is directed toward and disposed below the outer surface; and a lip which is formed from a portion of the body adjacent the cavity and which, when the disk is positioned in the cavity, overlaps an outer peripheral portion of the disk to thereby secure the disk in the cavity without obscuring the identifying marking, wherein the cavity comprises: an inner portion within which the disk is positioned; an outer portion which extends between the inner portion and the outer surface; and a shoulder which is located between the inner and outer portions; wherein the lip is formed from the shoulder, wherein the inner portion comprises a depth which is greater than the thickness of the disk.

~~In accordance with the present invention, these and other limitations in the prior art are addressed by providing an identification system for a component which comprises a body having an outer surface which in use is subject to wear. The system includes an identification disk which comprises generally parallel~~

~~upper and lower faces and a thickness which is defined between the upper and lower faces; a unique identifying marking which is provided on at least the upper face, the identifying marking corresponding to the identity of the component; a cavity which is formed in the body and extends from the outer surface to a depth that is greater than the thickness of the disk; wherein in use of the identification system the disk is positioned in the cavity such that the upper face is directed toward and disposed below the outer surface; and a lip which is formed from a portion of the body adjacent the cavity and which, when the disk is positioned in the cavity, overlaps an outer peripheral portion of the upper face to thereby secure the disk in the cavity without obscuring the identifying marking.~~

In accordance with one embodiment of the invention, the cavity comprises an inner portion within which the disk is positioned; an outer portion which extends between the inner portion and the outer surface; and a shoulder which is located between the inner and outer portions; wherein the lip is formed from the shoulder. In this embodiment, the inner portion may comprise a depth which is greater than the thickness of the disk.

In accordance with yet another embodiment of the invention, the inner portion comprises a first diameter, the outer portion comprises a second diameter

which is greater than the first diameter, and the shoulder comprises a generally square profile. In this embodiment, the inner portion may comprise a depth which is greater than the thickness of the disk.

In accordance with a further embodiment of the invention, the inner portion comprises a first diameter, the outer portion comprises a second diameter which is greater than the first diameter, and the shoulder comprises a radially inner portion which is located a first distance from the outer surface and a radially outer portion which is located a second distance from the outer surface. In this embodiment, the first distance is less than the second distance and the shoulder may comprise, e.g., a generally triangular profile, a concave profile, or a convex profile, among other configurations.

In any of the above embodiments, the lip may comprise an upper portion which is located proximate the bottom of a wear allowance zone of the component.

According to a second aspect, there is provided a method for providing a component with a unique identifying marking, the component having a body with an outer surface which in use is subject to wear, the method comprising: providing an identification disk which comprises upper and lower faces and a thickness which is defined between the upper and lower faces; disposing the identifying marking on at least the upper face; forming a cavity in the body which extends from the outer surface to a depth which is greater than the thickness of the disk; positioning the disk in the cavity such that the upper face is directed toward and disposed below the outer surface; and forming a lip from a portion of the body adjacent the cavity such that, when the disk is positioned in the cavity, the lip overlaps an outer peripheral portion of the disk to thereby secure the disk in the cavity without obscuring the identifying marking, wherein the cavity comprises: an inner portion within which the disk is positioned; an outer portion which extends between the inner portion and the outer surface; and a shoulder which is located between the inner and outer portions; wherein the lip is formed from the shoulder, wherein the inner portion comprises a depth which is greater than the thickness of the disk.

~~The present invention is also directed to a method for providing a component with a unique identifying marking. The method includes providing an identification disk which comprises generally parallel upper and lower faces and a~~

~~thickness which is defined between the upper and lower faces; disposing the identifying marking on at least the upper face; forming a cavity in the body which extends from the outer surface to a depth which is greater than the thickness of the disk; positioning the disk in the cavity such that the upper face is directed toward and disposed below the outer surface; and forming a lip from a portion of the body adjacent the cavity such that, when the disk is positioned in the cavity, the lip overlaps an outer peripheral portion of the upper face to thereby secure the disk in the cavity without obscuring the identifying marking.~~

Thus, the identification system and method as per embodiments of the present invention provides a simple yet effective means for marking components such as sections of drill pipe so that they can be identified and tracked. The identification disk is preferably made of a durable material, such as stainless steel. Consequently, the disk is relatively impervious to extreme temperatures and pressures. In addition, the disk is retained in the cavity by a lip which is formed integrally with the body of the component. Thus, little to no risk exists that the disk will be dislodged during use of the component. Also, the cavity may be configured and the lip formed such that an upper portion of the lip is located proximate the wear

allowance zone of the component. Thus, as the surface of the component is worn down during use, exposure of the upper portion of the lip will provide a visual indication that the component has reached its wear allowance and should be replaced.

These and other aspectsobjects and advantages of the present invention will be made apparent from the following detailed description, with reference to the accompanying drawings. In the drawings, the same reference numbers may be used to denote similar components in the various embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a top plan view of one embodiment of an identification disk which is suitable for use in the identification system and method of the present invention;

Figure 2 is a side elevation view of the identification disk shown in Figure 1;

Figure 3 is an illustrative example of a two dimensional code marking which is suitable for use in the identification system and method of the present invention;

Figure 4 is a top plan view of the identification disk of Figure 1 shown mounted in a representative section of drill pipe;

Figure 5 is a cross sectional view of the drill pipe and identification disk of Figure 4 taken along line 5 – 5;

Figure 6 is a cross sectional view similar to Figure 5, but illustrating the drill pipe having been worn down to the point requiring that it be removed from service;

Figure 7 is a top plan view of an alternative embodiment of an identification disk which is suitable for use in the identification system and method of the present invention;

Figure 8 is a top plan view of the identification disk of Figure 1 shown mounted to a representative section of drill pipe in accordance with another embodiment of the present invention;

Figure 9 is an enlarged cross sectional view of the drill pipe and identification disk of Figure 8 taken along line 9 – 9;